

CHAPTER 7. SUMMARY AND STEPS FOR GOING FORWARD

This chapter summarizes the recommendations and some of the immediate steps to take to implement the recommendations of this report. Some longer-term considerations for changing the culture of wildland firefighting are also discussed.

Despite the large number of goals and the even larger number of suggested implementation strategies we presented here, *the Federal interagency wildland firefighting program has done remarkably well, and currently has many more strengths than problem areas*. In going forward, it is important to remind everyone from firefighters just coming into the program to top leadership that the recommended changes build on a successful national interagency program with excellent inter-governmental linkages. The vast majority of the 1,000 firefighters interviewed or surveyed did not think that a revolution was called for, but rather that there was a need to solve a variety of specific problems that are not surprising in as large and complex a human undertaking as wildland firefighting.

Outside sociologists and psychologists brought in to examine the wildland firefighting program and the wildland firefighting community found them quite remarkable. Going forward with the recommendations presented here to change the organizational culture will be another extremely positive aspect of the wildland firefighting program – that it willingly identified its problems and continues to improve over time.

Still, as noted in the report *Course to the Future: Positioning Fire and Aviation Management*,¹ “Despite having widely known safe-practice procedures, access to an advanced fire behavior prediction system, required personal protective equipment, and an established firefighter safety training program, 34 people lost their lives across interagency jurisdictions in 1994.” That honest assessment illuminates a critically important issue: that espoused policy only becomes effective policy when it produces the behavior desired of people. To affect change, United States firefighting agencies need fireline safety policy that enjoys a great deal of consensus and field support, manifesting itself as behavior on the fireline and at various levels of leadership. We found that many safety problems came from a failure to implement existing policies, more than a need for new policy. In some cases the problem is a lack of awareness or understanding of the policy.

Setting Priorities

It is difficult to set priorities among the various recommendations made for two major reasons: there is a lack of adequate data on the frequency of occurrence of the various underlying factors that lead to firefighter fatalities, injuries, and near-misses, and the various factors are highly interrelated. Further, there is often a chain of events leading to fatalities or serious injuries, and the various links in the chain are often not documented. It is difficult to say whether attention to fatigue, training for decision-making under stress, or closing of communication loops is the highest priority when one does not know the percent of fatalities or serious injuries in which fatigue was an element or a communications failure or poor decisions from leaders being “stressed out.” Regarding interrelationships, we know that the pride and professionalism of the workforce affects retention, which in turn affects experience levels, which in turn affects abilities to make decisions under stress. Does one start with the existing leadership and put highest priority on decision training, or does one start with retention incentives that affects build-up of expertise? Ideally, one would like to do all of these things in parallel, and in fact, many of the most important strategies presented can and should be undertaken in parallel. But someone has to decide on what things to do first.

The Fire Directors must take the first major step toward implementation of the recommended strategies by deciding on their priorities.² As part of setting priorities, the reasonableness and validity of each recommendation needs to be considered. Some may already be in progress. Ideas for additional or alternative strategies to meet the goals should also be considered and prioritized.

At the end of this chapter, in Table 7-1, we have listed all of the goals and associated implementation strategies, and our own ratings of the priority of the recommendations. We used the following rating scale:

¹ Op. cit.

² The goals themselves already have been approved as part of the Phase II process. In reviewing them for Phase III, none were dropped. A few had small wording changes, and several were found to be redundant or close enough to others to be viewed together as a cluster of two or three goals; and one was added for clarification (Goal 50).

- Priority 1. Critical, essential, highest priority recommendations for improving safety.
- Priority 2. Highly important for improving safety.
- Priority 3. Important or desirable for improving safety.

Something that is critical to safety but generally being done well was given less priority than an area where a large improvement is needed. For example, transporting injured firefighters is of critical importance, but it seems to be done well in most cases, and is therefore not given a “1” rating. The priorities in the table indicate which ones, in our opinion, are most important to start doing first, not necessarily those factors most important in the abstract. Many good things are happening already to improve safety; one needs to flag the things that need the most attention to make further progress, or to prevent increasing risk. Many of the decisions about priorities were difficult – there is a tendency to label everything as critically important. Most of the recommendations will improve safety. If we did not think a recommendation was important we would not have included it in the report at all. The items discussed in the Executive Summary were the ones we felt would make the most significant difference in affecting firefighter safety.

The five agencies’ fire programs are extremely dynamic and continually evolving. We have tried to reflect a reasonably current status of the existing programs in making recommendations, but there may be cases where there was progress we did not hear about or initiatives already planned to meet some of the same goals. Final priorities set by the agencies should of course reflect the latest information.

Developing an Assignment Matrix

After determining the priority of each implementation strategy, we recommend that the Fire Directors develop an assignment matrix. For each implementation strategy, this matrix would list a) the person or unit or working group responsible for implementation and b) milestones and a date to complete. Implementation strategies that require non-trivial funding need to be worked into agency budgets. The table at the end of this chapter provides a starting point for the matrix, but milestones and assignees need to be added.

Appointing a “Hound Dog” or “Champion”

Our past research into successful fire prevention programs found that in virtually every case there was a “champion” or “sparkplug” who tenaciously fought for the project and stuck with it through implementation.³ Since the implementation here requires starting many efforts, there needs to be a “champion” for each task and an overall champion or “hound dog” to track the set of tasks and monitor progress of the whole program. The final phase of this project is planned to do part but not all of this job.

An individual or unit within or outside the agencies needs to be appointed to periodically (e.g., at least quarterly) contact the person or unit given responsibility for each implementation strategy and report on the status of that strategy. An overall status report should be sent on a regular basis to the Fire Directors, with red flags provided for projects that do not seem to be moving according to schedule – especially for those considered highest priority. The “hound dog” aspect of the reporting function would help ensure that implementation proceeds by maintaining continued interest (or even nagging!) about the status of each task, with the tacit understanding that it was going to be tracked at the highest level. The key is not the reports but the active interest and follow-up, and the knowledge that the level of progress will be publicized.

The “hound dog” should be put in the loop of relevant memos, reports, and significant correspondence issued by the task assignees for each implementation strategy. The assignees would know that someone was monitoring their work to see if there was action, and if necessary that they would be receiving a call if there was no visible progress.

There are various project management software packages that are well suited for showing milestones and project status graphically for a large number of interrelated tasks. Such a graphic display may be helpful to the fire directors to track progress.

Dissemination of Study Results

Dissemination of this report itself will be important both to establish widespread understanding of what is being recommended and to demonstrate that there has been much follow-up to the inputs obtained from 1,000 firefighters. This dissemination should

³ P. S. Schaenman, et al, *Proving Public Fire Education Works*, TriData Corporation, Arlington, Virginia, 1990.

help motivate people at various levels to participate in the implementation. The dissemination of the findings needs to proceed along several paths.

As was done with the Phase I and Phase II reports, this Phase III report should be made available to anyone interested in it; a large number of copies should be disseminated. The agencies should inform their firefighters and fire managers of its existence, and make it available on the Internet, as was done with the Phase I and II reports.

But a crucial difference between this phase and the preceding ones needs to be considered: many highly energetic managers at various levels will read the report, see ideas they like, and start implementing them. This reaction generally should be encouraged, publicized, and even rewarded. However, for any implementation strategies thought not to be viable, or recommendations with which the fire directors do not concur, or strategies already started, a note to that effect needs to be sent out along with the report, so that no one starts working on something that is not considered a good idea or that is not consistent with other plans or policy, or that would be a redundant effort. Disseminating the implementation plan will be even better toward these ends.

In addition to making the report itself available, the dissemination methods used in previous phases should be expanded. A summary of the results should be presented at selected wildland firefighting and Agency Administrator conferences and meetings. In 1998 the Fire Directors have had the recommendations of this report discussed by the project team at two of their meetings (in January in Boise, and in February in San Antonio). In the previous phases, the project study team gave presentations at selected meetings and developed overheads that were used by others to give presentations at their own meetings. We suggest the same approach be continued, but with even greater dissemination of the recommendations once the Fire Directors determine the priorities and assignments for implementation.⁴

We also recommend issuing a press release and articles on the findings and recommendations of the study for dissemination not only through the internal agency

⁴ A meeting is planned for May 1998 in Boise to decide on the implementation approach, as this report was being completed.

distribution mechanisms, but also externally through major fire world publications and on the Internet. Many of the ideas developed for the Federal wildland firefighting community in this report have application to state wildland fire organizations and to the local fire service.

Because the report is voluminous, some summary versions need to be available. The Executive Summary, perhaps coupled with the short Introduction and Methodology chapters, including the list of goals and implementation strategies summarized in this chapter could be the core for press releases or for quick dissemination of results in lieu of an article.

Integration of Management and Workforce

As stated in Chapter 2 (Methodology), the culture must change from both ends, top and bottom. Recommendations for improving the safety aspects of how work is conducted must first involve the firefighters themselves. Then the changes must be championed by management vigorously, visibly, and vocally. The implementation process must involve both, or cultural change cannot occur.

In this project, *the starting point* was involvement of the workforce. Over 1,000 firefighters were either interviewed in person or surveyed with a detailed comprehensive questionnaire, including open-ended questions to which hundreds provided written ideas and opinions. The set of issues that emerged from this large sample of the workforce drove this project. Furthermore, we solicited not only problems, but also solutions. The extraordinary breadth of this study came from the multitude of issues raised by the 1,000 firefighters, and the many solutions they proposed.

So how do you get everyone involved in the implementation?

The first step is to create widespread awareness. As recommended above, get the reports on the Internet and make sure people know about it. Get lots of copies out into the field and into people's hands. Send a news release or articles to every fire publication and agency newsletter, including *Fire Management News & Notes*, *Wildfire*, *Wildland Firefighter*, *Journal of Forestry*, *NFPA News*, *American Fire Journal*. Conduct "roll-out" meetings for the Fire Directors (FFALC), FFAST, NWCG, all GACGs, and the field (sponsored by GACGs) where people are formally and systematically introduced to the goals, the strategies, priorities, assignments, resources assigned, and target dates, and

given the opportunity to ask questions, get clarification, express their opinions, and provide input. Orient and train “circuit riding champions of the cause” and turn them loose to brief people at all levels of the organizations (districts, forests, refuges, etc.). As the saying goes, from awareness comes appreciation, from appreciation comes understanding, from understanding comes commitment and action.

That initial surge of dissemination must be the start, not the end of the workforces’s involvement. The agencies need to keep the workforce involved in the implementation of the recommendations. Solicit input through workshops, conferences, meetings, and questionnaires. Give lots of important assignments to the field and to “interest groups” such as regional Hotshot steering committees, smokejumpers, GACGs and their zones. Demand accountability and make sure that the strategic direction permeates every aspect of these people’s work life (work planning priorities/targets, budgeting, performance evaluations, merit system promotions, awards, bonuses, raises, etc.).

To achieve a managed risk environment, people must pull in the same direction on policy, procedure, strategy, tactics, and what constitutes acceptable behavior for individual firefighters. That unity of purpose and direction requires a great deal of consensus across agency, cultural and sub-cultural lines. However, by nature, people do not commit to the determinations others make for them. Widespread commitment to organizational change demands the vigorous and systematic involvement of the people expected to carry out change. With firefighter safety, this involvement should occur through an organized, methodical process that encourages employees at all levels of all agencies to influence strategic issues. A culture of firefighter safety excellence will result from widely held attitudes. Attitudes will be the result of widely observed behavior. Behavior will result from a consensus on, and commitment to, the strategic goals documented by the firefighter safety awareness study.

Personal Actions by Fire Directors and Other Top Management

The Fire Directors and their senior managers personally have a critical and personal role to play in seeing that change occurs, and in determining how fast it occurs. It will take several years, perhaps as many as five to ten years, to implement the various changes in organizational culture, leadership and human factors recommended here, even if there is widespread agreement on the recommendations. Thus, there also is a need for patience.

Our specialists in organization change, drawing on real-world examples and on research from sociology and psychology, strongly recommend that the fire leadership take numerous incremental steps to help change the culture. The culture will not change by putting out an edict that says, “New safety program starts Monday morning.” Cultures don’t change that way. Rather, the leadership needs to start a variety of specific implementation strategies. They need to show continued interest in safety by asking questions about the safety implications of programs that they are dealing with day to day. They need to praise individuals who have made contributions to safety, and provide critical marginal notes or other types of comments on various letters, memos, and reports they see that either do not address safety when they should, or take a step backward.

Many researchers have found that workers stay aware of what is truly important in their organizational culture not by what is given lip service, but by what is continually the subject of reward or penalty, and what is continually on the minds of the leadership. Safety becomes a part of the culture not so much when it is not discussed as a separate program, but rather when it is something that is paid attention to continually. Therefore, we recommend against presenting the changes here as a major safety campaign, but rather many changes should be started, letting the actions speak for themselves. The leadership also should connect these actions to the starting point – the comments from all levels of the workforce.

Key ideas on the role of leadership in making change happen are discussed in a paper produced as part of this project for the January 1998 meeting of the Fire Directors by a member of the project team, Dr. Charles Perrow, Professor of Sociology at Yale University and a specialist in safety of complex organizations.⁵

Tracking and Evaluation

The final phase of this project, Phase V, is to be a periodic tracking of progress made in changes in the organizational culture, leadership, human factors, and attitudes about safety.⁶ An initial set of performance measures was developed in Phase II that can be used for this tracking, after review and modification to reflect the implementation plans. The evaluation of impacts of the recommended changes are not the same as the

⁵ Perrow, op cit.

⁶ For those familiar with the past numbering of phases in this project, note that old Phase IV (evaluation of progress) has been renumbered Phase V, and a new Phase IV added to assist with implementation.

“hound dog” function above, though the two functions are complementary and can be incorporated in one organization that would both monitor whether milestones were being met, and also periodically evaluate the impact.

Concluding Remarks

Many of the changes necessary to improve safety recommended in this report are relatively straightforward and do not cost much to implement. Others require modest expenditures, e.g., to develop course materials or start on-the-job training. Some require higher expenditures (e.g., new technology for aerial observation, “smart” Red Cards, safety data system, etc.). Some of the changes recommended here can be undertaken by the existing organizations without major impacts on their budgets. Many recommendations will require some additional expenditures to change the fire safety culture as desired, and save firefighters’ lives.

If the men and women of the Federal wildland firefighting community help implement the many recommendations discussed here that originated from problems and solutions they identified, the wildland firefighting program will not only continue to be an exemplary national effort, but a much safer one at that.

**TABLE 7-1. SUMMARY OF PRINCIPLES, GOALS AND THEIR PRIORITY RATINGS
AND IMPLEMENTATION STRATEGIES**

GOALS AND IMPLEMENTATION STRATEGIES		PRIORITY RATING ⁷
ORGANIZATIONAL CULTURE		
<i>Principle – Preserve strength of current system.</i>		
<i>Goal 1. The existing strengths of the Federal wildland firefighting system should be preserved and built upon.</i>	2	
IS 1 – “Physician Do No Harm.” Evaluate proposed strategies and changes to avoid unintentional negative side effects.		2
IS 2 – Disseminate information on what is perceived to work well.		2
IS 3 – Fix the existing system first.		3
<i>Principle – Collect reliable safety data and use it.</i>		
<i>Goal 2. A “Code of Conduct” should be established in which employees should have both the right and obligation to report safety problems, and to contribute ideas on their safety to supervisors. The supervisors are expected to give the concerns and ideas serious consideration.</i>	1	
IS 1 – Disseminate directives – and otherwise spread the word – that each person is expected to report safety problems and to contribute potential solutions.		1
IS 2 – Train new firefighters to speak up about safety.		1
IS 3 – Train supervisors to listen.		2
IS 4 – Include the raising and handling of safety comments in performance ratings and accountability systems.		2
IS 5 – Involve employees in developing ways to get these ideas implemented in the field.		1
IS 6 – Promote a single code of conduct (including the reporting of safety incidents) across agencies.		2
<i>Goal 3. Every employee is expected to report a) injuries (and of course fatalities), b) entrapments/shelter deployments/burnovers, and c) near misses.</i>	1	
IS 1– Develop a common interagency reporting system.		1
IS 2 – Incorporate basics on safety reporting in training courses.		2

⁷ Priority ratings are given in terms of the importance for change from the current situation, not the absolute importance of the goal or strategy. The ratings are: 1 – Critical to change or improve, 2 – Highly important to change or improve, 3 – Important or desirable to change or improve. Some very important subjects (e.g. transport of injured firefighters, or the need to be sober) were given lower than “1” ratings because of having less of a need to change from where they stand today than was the case for other issues.

GOALS AND IMPLEMENTATION STRATEGIES		PRIORITY RATING ⁷
Goal 4. The five agencies should strive to obtain a clear, quantitative picture of the pattern of safety incidents, their causes, trends, and the lessons learned; and to identify potential problems at the earliest time possible. IS 1 – Analyze and publish safety data. IS 2 – Establish a safety-oriented Center for Lessons Learned.	1	1
		1
Goal 5. All wildland firefighter fatalities should be investigated in a consistent manner to glean lessons for averting future fatalities. IS 1 – Develop interagency protocols for the process and substance of investigations.	1	2
Principle: Promote accountability for safety at all levels		
Goal 6. Individuals at all levels should be held accountable for safety violations. IS 1 – Start policy of removing safety violators from the job. IS 2 – Follow-up on reported safety infractions. IS 3 – Consider safety performance in performance reviews and promotions. IS 4 – Add training in accountability. IS 5 – Include accountability in operational guidelines. IS 6 – Provide guidelines for accountability.	1	1
		2
		1
		2
		2
		2
Goal 7. An individual or Crew Supervisor should have the right of refusal to pull themselves or their crew out of what they perceive as undue danger. IS 1 – Train firefighters on the process to use, not just the right. IS 2 – Monitor frequency of refusals. IS 3 – Head off situations in which refusals are necessary.	2	1
		3
		1
Goal 8. Foster a sense of individual responsibility for safety actions. IS 1 – Include in the ‘code of conduct’ that all employees are responsible for adhering to safe practices and correcting violations. IS 2 – Discuss the issue of responsibility in initial training and in refresher training. IS 3 – Disseminate examples and stories of successful individual initiatives.	2	1
		2
		2
Principle – Promote safety for all who work at Federal fires		
Goal 9. The safety goals and rules should apply to all firefighters working at a wildland fire which is a Federal worksite. IS 1 – Require, encourage, and assist non-Federal agencies to comply with safety precautions. IS 2 – Provide (or facilitate obtaining) training and equipment for non-Federal firefighters who assist.	1	1
		3

GOALS AND IMPLEMENTATION STRATEGIES	PRIORITY	RATING ⁷
<p>Goal 10. The rights and responsibilities of wildland firefighters should apply to all, regardless of race, gender, ethnic affiliation, or employment status.</p> <p>IS 1 – Ensure that all of the recommendations here are applied uniformly for all types of firefighters.</p> <p>IS 2 – Ensure equitable equipping and treatment of Type II crews.</p> <p>IS 3 – Provide opportunities for verbal communications training.</p>	1	<p>1</p> <p>3</p>
Principle – Rebuild the level of experience.		
<p>Goal 11. Adequate experience levels are needed for Crew Supervisors and higher positions. There is a minimum cadre of experienced personnel needed for each supervisory level of the fire program.</p> <p>IS 1 – Periodically develop strategic assessments of personnel needs.</p> <p>IS 2 – Track experience levels.</p> <p>IS 3 – Establish an apprenticeship program.</p> <p>IS 4 – Revise requirement for currency of certification.</p> <p>IS 5 – Increase the use of special assignments to build experience.</p> <p>IS 6 – Encourage more participation from non-fire personnel.</p>	1	<p>1</p> <p>2</p> <p>2</p> <p>2</p> <p>3</p> <p>3</p>
<p>Goal 12. Encourage the retention of permanent employees on fire duty.</p> <p>IS 1 – Remove pay caps for overtime on fires.</p> <p>IS 2 – Consider expanding use of special pay and retirement incentives for collateral duty personnel.</p> <p>IS 3 – Increase expectations for employee participation in fire programs.</p> <p>IS 4 – Evaluate employees' willingness to participate in fire programs.</p>	2	<p>2</p> <p>3</p> <p>2</p> <p>2</p>
<p>Goal 13. Encourage retention of seasonals on fire duty.</p> <p>IS 1 – Re-examine personnel policies that inhibit retention of seasonals.</p>	1	<p>2</p>
<p>Goal 14. Develop ways to use training of various types to compensate for lack of experience.</p> <p>IS 1 – Expand use of on-the-job training; train people how to do it.</p> <p>IS 2 – Enhance course training in strategy and tactics.</p> <p>IS 3 – Develop family of simulators and other instructional technology.</p> <p>IS 4 – Develop a family of simulations.</p> <p>IS 5 – Use more visual, interactive multimedia training.</p> <p>IS 6 – Prepare for out-of-region experience.</p>	1	<p>1</p> <p>1</p> <p>2</p> <p>2</p> <p>2</p> <p>3</p>

GOALS AND IMPLEMENTATION STRATEGIES	PRIORITY	RATING ⁷
<p>Goal 15. Ensure that individuals and crews in low fire incidence areas have the opportunities for experience in other areas, and/or have adequate oversight when sent to different or complex situations.</p> <p>IS 1 – Provide opportunities to work in high incidence areas.</p>	3	3
Principle – Ensure the integrity of the certification and qualification system.		
<p>Goal 16. Certifications (e.g., Red Cards) should be meaningful indications that a person is ready to take on the requirements of the job they are certified for.</p> <p>IS 1 – Better explain the intent of the system and its requirements.</p> <p>IS 2 – Train managers better on implementing performance – based certification.</p> <p>IS 3 – Revise Position Task Books if necessary.</p> <p>IS 4 – Use key tasks from the Position Task Books in performance evaluations.</p> <p>IS 5 – Toughen currency requirements.</p> <p>IS 6 – Make training required (versus “suggested”) to achieve qualifications.</p>	1	1 2 2 2 2 2
<p>Goal 17. Signing off on Red Card credentials without reasonable evidence that the person has met all of the requirements should be a punishable offense.</p> <p>IS 1 – Educate and build confidence about the system.</p> <p>IS 2 – Utilize disciplinary actions when appropriate.</p>	2	2 1
<p>Goal 18. Credentials should be reviewed for all resources before the resources are utilized.</p> <p>IS 1 – Revise ICS training materials regarding check-in.</p> <p>IS 2 – Motivate the check-in recorders concerning the importance of their role.</p> <p>IS 3 – Develop “smart” Red Cards that allow quicker, more accurate check-in of individuals.</p> <p>IS 4 – Ensure that IMT training stresses the need to consider and share information on the status and certification of crews at check-in.</p> <p>IS 5 – Ensure equality of review across positions.</p> <p>IS 6 – Evaluate acceptance level for insignia.</p>		2 2 2 3 3 3

GOALS AND IMPLEMENTATION STRATEGIES	PRIORITY RATING ⁷
<i>Principle – Communications must be clear and understood.</i>	
<p><i>Goal 19. One-way communication should be replaced by two-way dialog. People at each level of the fire hierarchy should be comfortable with requesting clarification of information, or requesting additional information. There should be no stigma attached to requesting clarification; it should be considered professional to do so.</i></p> <p>IS 1 – Start training in interpersonal communications with the very first Firefighting training, and expand the training to include the new concepts Presented here.</p> <p>IS 2 – Require formal acknowledgments, especially in radio communication.</p> <p>IS 3 – Legitimize and encourage the asking of questions.</p> <p>IS 4 – Use multiple means to convey the cultural change.</p> <p>IS 5 – Establish communications protocols for tactical operations.</p> <p>IS 6 – Use Crew Resource Management (CRM)-like training.</p> <p>IS 7 – Change the dialogue on the fireline through on-the-job training and examples provided by supervision.</p> <p>IS 8 – Provide instruction on use of radios and radio discipline.</p>	<p><i>1</i></p> <p>1</p> <p>1</p> <p>2</p> <p>2</p> <p>1</p> <p>1</p> <p>1</p>
<p><i>Goal 20. Information needed for safe operations and warnings should be transmitted up, down, and laterally within the organization at an incident, (with positive feedback that the information is received and understood, as discussed in Goal 19.)</i></p> <p>IS 1 – Improve the quality of briefings at incidents.</p> <p>IS 4 – Develop and use checklists for transmission of information.</p>	<p><i>1</i></p> <p>1</p> <p>3</p>
<p><i>Goal 21. Dispatchers are key nodes in the communication system and must be well-trained, well-informed during the incident, and must not exceed their authority.</i></p> <p>IS 1 – Train dispatchers in the new approach to communications dialogue and in their role as change agents.</p> <p>IS 2 – Improve recruiting and initial training of dispatchers.</p>	<p><i>2</i></p> <p>2</p> <p>3</p>

GOALS AND IMPLEMENTATION STRATEGIES		PRIORITY RATING ⁷
<i>Principle – Provide firefighters with safe and adequate protective gear, tools, equipment and transportation.</i>		
<i>Goal 22. All firefighters (on Federal fires) must be equipped with the personal protective equipment needed for their job (and the training to use it).</i> IS 1 – Broadcast and enforce minimum standard for radios and personal protective equipment. IS 2 – Prepare for equipping non-Federal firefighters at incidents. IS 3 – Support funding for state and local fire units. IS 4 – Reinforce policy on carrying shelters.	<i>1</i>	1 2 3 2
<i>Goal 23. Every crew should have a continuous communications link to incident management and to nearby crews; this means having at least two radios in good working condition per crew.</i> IS 1 – Improve distribution of radios, batteries, and other communication equipment. IS 2 – Establish new caches if necessary. IS 3 – Mandate radios for each squad. IS 4 – Assure adequacy of radios for mobile resources.	<i>1</i>	1 3 1 1
<i>Goal 24. The communications system used at fires needs to provide adequate channels, adequate clarity, and adequate reliability for communicating with all fire personnel, aircraft, and IMTs.</i> IS 1 – Periodically re-evaluate and improve communication channel capacity and reliability. IS 2 – Move some of the communications load off the radio.	<i>2</i>	2 3
<i>Goal 25. There should be accountability for keeping equipment well-maintained.</i> IS 1 – Describe equipment maintenance responsibility in basic courses. IS 2 – Review and revise if necessary the qualifications of equipment specialists. IS 3 – Hold users and cache operators responsible.	<i>3</i>	3 3 3
<i>Goal 26. Situational awareness should be improved by improving the ability of Crew Supervisors, Incident Management Team, Incident Commanders and above to obtain overhead views of the fire, including data from infrared and possibly other sensors.</i> IS 1 – Use satellite imagery. IS 2 – Use real time air-to-ground and ground-to-air video. IS 3 – Use aerial drones.	<i>1</i>	2 1 2

GOALS AND IMPLEMENTATION STRATEGIES		PRIORITY RATING ⁷
Goal 27. Crews, teams, and individuals should be transported where needed with attention to net risk reduction and with consideration of reducing fatigue. IS 1 – Give more weight to risk reduction, especially reduction of fatigue. IS 2 – Explore use of safer ground transportation. IS 3 – Use computerized transportation scheduling.	1	1 2 3
Goal 28. All transportation drivers should have adequate experience and training. IS 1 – Increase requirements and realism for training of bus drivers and other drivers. IS 2 – Hold drivers accountable.	2	2 2
Principle – Provide quick, high quality care for the injured.		
Goal 29. Injured firefighters should be speedily rescued. IS 1 – Appoint a task group to review evacuation procedures and associated paperwork, and consider a model evacuation plan. IS 2 – Reduce evacuation needs by improving on-site care.	2*	3 2
LEADERSHIP AND FIRE MANAGEMENT*		
Principle – Assure leadership is qualified and well-trained.		
Goal 30. Set firefighting goals commensurate with available resources. IS 1 – Use the “Wildland Fire Situation Analysis” approach or others to evaluate fire control strategies and select the best commensurate with available resources. IS 2 – Encourage regional and national fire managers to be more flexible and to revise priorities in real time during a season, when necessary. IS 3 – Provide adequate fire management training to Agency Administrators, and encourage them to exercise more discretion to enhance safety.	1	2 1 1

* To repeat a previous note: this is a highly important goal but not rated “1” because it is largely being done and in less need of improvement than other goals.

* Also related are goals on situational awareness.

GOALS AND IMPLEMENTATION STRATEGIES	PRIORITY	RATING ⁷
<p>Goal 31. Do not fight fires in a way that will endanger firefighters, regardless of the values to be protected.</p> <p>IS 1 – Ensure that this goal is emphasized in strategic and tactical fire courses.</p> <p>IS 2 – Do not allow constraints on firefighting approach due to ecological considerations to interfere with safe protocols.</p> <p>IS 3 – Do not permit structural firefighting by firefighters not trained for it.</p>	1	2 1 2
<p>Goal 32. The strategy and tactics of fighting a fire must be flexible and periodically reconsider the available resources and the changing situation.</p> <p>IS 1 – Train and evaluate fire managers in being flexible and readjusting strategy and tactics as needed.</p>	1	2
<p>Goal 33. Long-term fire growth assessment models should be used in making decisions on fire management strategy.</p> <p>IS 1 – Prepare ahead of time for use of models.</p> <p>IS 2 – Use fire growth models in real time to establish priorities.</p>	2	2 3
<p>Goal 34. Define adequacy of safety zones by terrain type, fuel type, and fuel condition.</p> <p>IS 1 – Publish a “job aid” (concise notes) on sizing safety zones.</p>	2	2
<p>Goal 35. Assure that safety is adequately considered as transitions are made from initial attack to extended attack, from extended attack to Type II IMT, from Type II to Type I IMT, and back from IMT to local unit.</p> <p>IS 1 – Emphasize the safety aspects of handling transitions in various command courses.</p> <p>IS 2 – Develop checklists for each of four levels of transition.</p>	1	1 2
<p>Goal 36. Where appropriate, in areas designated for aggressive attack, more fires should have a rapid initial response when they are small, if resources are available (and when the potential for spread and the values to be protected are a concern).</p> <p>IS 1 – Get employee buy-in at all levels for use of more vigorous initial and extended attack.</p>	2	2
<p>Goal 37. To prevent information overload and allow flexibility, the fire orders should periodically be screened to identify the minimum essential set, and that should be rigorously enforced.</p> <p>IS 1 – Conduct a content analysis of the various guidelines and produce a reduced set.</p> <p>IS 2 – Re-define which are truly orders and which are guidelines that can be modified under special circumstances.</p>	2	2 2

GOALS AND IMPLEMENTATION STRATEGIES	PRIORITY	RATING ⁷
<p>Goal 38. Fire safety practices should be driven by a systematic risk assessment that gets updated periodically.</p> <p>IS 1 – Adopt a comprehensive risk management approach to firefighter safety.</p> <p>IS 2 – Establish and cultivate a culture that encourages people to think, make effective decisions, and place a priority on firefighter safety.</p> <p>IS 3 – Incorporate the risk management concept in training.</p>	1	1 1 1
<p>Goal 39. The list of Watch Outs needs to be integrated into training and decision-making, and their role as warnings emphasized.</p> <p>IS 1 – Clarify the use of the Watch Outs in training.</p>	3	3
<p>Goal 40. Workable spans of control should not be exceeded at any level of management, especially not by Division and Group Supervisors.</p> <p>IS 1 – Encourage flexibility in establishing and subdividing divisions when appropriate.</p> <p>IS 2 – Reaffirm ideal span of control.</p>	2	2 3
<p>Goal 41. Develop and use criteria for determining when night operations would be safe and effective. Acknowledge that, depending on circumstances, night operations are a tool that may enhance safety or may increase risk.</p> <p>IS 1 – Develop a job aid or set of criteria for deciding when to use night operations, and when not to.</p>	2	2
<p>Goal 42. Fire experience and competency should be considered as critical selection factors for fire leadership and fire management positions.</p> <p>Goal 43. All personnel in a given position must meet the performance requirements of that position.</p> <p>Goal 44. Fire management officers (FMOs) must be selected from among those with fire backgrounds.</p> <p>IS 1 – Set and enforce minimum requirements for key leadership positions.</p> <p>IS 2 – Require fire experience for the FMO position.</p> <p>IS 3 – Review incumbents who do not measure up, and reassign or retrain if appropriate.</p> <p>IS 4 – Require Fire Management course for FMOs or their equivalent.</p> <p>IS 5 – Give fire management training to all Agency Administrators with fire program responsibilities.</p>	1 2 1	1 1 2 2 2
<p>Goal 45. Those in sensitive command functions should have relatively fresh or updated experience.</p> <p>IS 1 – Require more recent experience (or equivalent training exercise).</p>	2	2

GOALS AND IMPLEMENTATION STRATEGIES	PRIORITY	RATING ⁷
<p>Goal 46. Crew Supervisors should be selected not only for technical knowledge and experience, but also for their leadership skills, interpersonal communications, and ability to conduct on-the-job training.</p> <p>IS 1 – Develop a “multi-source assessment” center approach to selecting supervisors.</p> <p>IS 2 – Stiffen other requirements for Crew Supervisor.</p> <p>IS 3 – Train supervisors and/or candidates for supervision on how to conduct on-the-job training.</p>	2	2 2 3 2
<p>Goal 47. No one should be allowed to set fire strategy or tactics for a fire or give any operational orders without having adequate fire experience, or training considered reasonably equivalent.</p> <p>Goal 48. Agency Administrators should have fire background, or strategic fire training (or delegate fire responsibilities to a subordinate with those qualifications.)</p> <p>Goal 49. The tone and substance of briefings by Agency Administrators should be conducive to and emphasize safety.</p> <p>IS 1 – Revise the fire-related competency requirements for Agency Administrators.</p> <p>IS 2 – Give examples to Agency Administrators of critical safety problems they can affect in meeting with Incident Management Team.</p> <p>IS 3 – Develop refreshers or quick-help approaches for Agency Administrators.</p> <p>IS 4 – Develop an attitude and ethic of professionalism that encourages retention and promotes safety behaviors.</p>	2 2 2	2 2 3 2 2 3
<p>Goal 50. Incident Commanders at all levels must be selected on the basis of leadership ability as well as technical competence.</p> <p>IS 1 – Develop criteria for Incident Commanders, especially Type 3-5.</p>	1	1
<p>Goal 51. The Safety Officer position responsibilities, priorities, and independence should be more clearly defined.</p> <p>IS 1 – Reexamine and clarify the role and organizational placement of Safety Officers.</p> <p>IS 2 – Set higher selection standards for Safety Officers.</p>	3	3 3

GOALS AND IMPLEMENTATION STRATEGIES		PRIORITY RATING ⁷
Goal 52. For extended attack (and larger) fires, someone needs to monitor operations to ensure compliance with established safety requirements, procedures, policies, and standards. IS 1 – Re-enforce the concept that everyone is responsible for monitoring safety. IS 2 – Assign someone ad hoc to monitor safety during transitions when no Safety Officer is present.	1 	

⁸ See also Goal 6-17, on fatigue.

⁹ In a few places, such as here, two or three related goals are grouped together, with one set of joint strategies for implementing them.

GOALS AND IMPLEMENTATION STRATEGIES		PRIORITY RATING ⁷
HUMAN AND PSYCHOLOGICAL FACTORS		
<i>Principle – Develop an attitude and ethic of professionalism that includes safety and encourages retention.</i>		
Goal 58. Firefighters need to maintain an appropriate psychological balance, avoiding the extremes of paralyzing fear of the danger, unawareness of the danger, or overconfidence/complacency/denial. IS 1 – Promote the image of a well-balanced professional firefighter as a role model.	1	1
Goal 59. Recognize and promote the image of the professionalism of wildland firefighters. IS 1 – Define the concept of being a professional firefighter. IS 2 – Refer to firefighters as firefighters, regardless of their job series. IS 3 – Expand firefighter duties to include prescribed fires. IS 4 – Expand other job duties and cross-training among lower-level firefighters. IS 5 – Increase the autonomy of firefighters to adapt to conditions. IS 6 – Develop a larger corps of professional firefighters. IS 7 – Expand cross-training of a core group of firefighters. IS 8 – Promote the concept of a professional “attitude of wisdom.”	1	1 2 1 2 3 3 2 1
Goal 60. Maintain a zero tolerance policy for substance abuse at fires (including bases and camps). IS 1 – Enforce the existing policy. IS 2 – Provide education on the policy and the need for zero tolerance. IS 3 – Include alcohol and drug testing for fatalities and serious injuries. IS 4 – Include being sober and drug-free as part of professionalism.	1	1 2 2 3
<i>Principle – Maintain situational awareness.¹⁰</i>		
Goal 61. Do what it takes to achieve and maintain situational awareness at each organizational level. IS 1 – Teach techniques for maintaining situational awareness in training courses from firefighter to Incident Commander.	1	1

¹⁰ This also is related to well-trained leadership.

GOALS AND IMPLEMENTATION STRATEGIES	PRIORITY	RATING ⁷
<p>Goal 62. Good communication is needed between crews working in proximity, especially one above the other.</p> <p>IS 1 – Mandate that crews and division supervisors be informed of the location of crews near each other.</p> <p>IS 2 – Keep crews working at different elevations near each other in radio contact and informed of each other’s plans.</p>	2	2 2
<p>Goal 63. Take extra safety measures in drought years.</p> <p>IS 1 – Activate regional interagency Fire Behavior Service Centers during drought years to increase available information and raise awareness.</p> <p>IS 2 – Use other, less formal ways to keep firefighters informed about conditions.</p>	2	2 2
<p>Principle – Realistic, high quality training must be used to compensate for lack of experience.</p>		
<p>Goal 64. Training should be available, high quality, and consistent.</p> <p>IS 1 – Develop a needs-based strategy for training across agencies (i.e., matching training availability to the quality and quantity of training needed).</p> <p>IS 2 – Develop a common approach to certifying instructors.</p>	1	1 2
<p>Goal 65. Accelerate learning by emphasizing the positive lessons from successful incidents, not just the negatives from failures.</p> <p>IS 1 – Identify positive case studies for use in training.</p> <p>IS 2 – Reward and publicize people involved in making exemplary decisions.</p>	2	2 2
<p>Goal 66. Training needs to be made more realistic.</p> <p>IS 1 – Increase use of realistic field training and exercises.</p> <p>IS 2 – Develop more case studies and simulations based on real fires.</p> <p>IS 3 – Increase the use of simulations and interactive exercises.</p> <p>IS 4 – Conduct skills training “in context” of realistic scenarios.</p> <p>IS 5 – Provide realistic shelter training to all wildland firefighters.</p> <p>IS 6 – Make use of live fires and prescribed fires for training.</p> <p>IS 7 – Improve quality of instruction.</p>	1	1 1 1 2 1 2 2

GOALS AND IMPLEMENTATION STRATEGIES	PRIORITY	RATING ⁷
Goal 67. Provide an adequate level of training to seasonals. IS 1 – Analyze seasonals training needs (quantity as well as content). IS 2 – Improve content and consistency of refresher training. IS 3 – Lengthen “pre-season” for at least first time seasonals and certain specialties. IS 4 – Provide more off-season training for seasonals. IS 5 – Include in the Red Card system seasonals with ICT 5 or higher level certification. IS 6 – Strengthen Smokejumper and Hot Shot refresher training with respect to safety. IS 7 – Take advantage of down-time for training. IS 8 – Provide incentives for seasonals to return.	1	2 1 2 3 3 2 3 2
Goal 68. Develop training priorities to make the most efficient use of the limited training resources. IS 1 – Use overall training needs analysis to set priorities. IS 2 – Target certain individuals.	2	2 2
Goal 69. Provide supervisors with training in leadership and supervisory skills. IS 1 – Train supervisors, IMT members, FMOs, and dispatchers in key “human” skills.	1	1
Goal 70. Teach wildland firefighters the basics on hazards faced in the urban/wildland interface. IS 1 – Train on the interface hazards to expect, and how to deal with them.	2	2
Goal 71. Maintain skills and safety awareness with on-the-job (and refresher) training. (Also accelerate the build-up of experience.) IS 1 – Develop a formal OJT training program, including teaching supervisors how best to provide OJT.	1	1
Goal 72. Provide training to crews on the reaction skills needed in dire emergencies that endanger them. Goal 73. Instill in each firefighter the necessity to switch modes and take extraordinary action in extraordinary emergency situations. IS 1 – Train on emergency skills at the individual level. IS 2 – Train on communicating in emergencies. IS 3 – Emphasize “stress-resistant” training.	1 2	1 1 2

GOALS AND IMPLEMENTATION STRATEGIES	PRIORITY	RATING ⁷
Goal 74. Prepare leaders for decision-making under stress. Goal 75. Prepare the entire workforce, not just leadership, for working under conditions of stress. IS 1 – Develop a Decision Skills Training program. IS 2 – Increase emphasis on “naturalistic” and “recognition-primed” decision-making. IS 3 – Search for ways to reduce workload and stresses in the field. IS 4 – Encourage self-development of ways to cope with stress. IS 5 – Develop a catalog of visual indicators or cues of situational change. IS 6 – Talk about stresses and raise awareness.	1 2	 1 2 3 2 2 3
Principle – People must not be pushed beyond their capability.		
Goal 76. Monitor and reduce fatigue levels to safe limits. IS 1 – Limit the duration of field assignment to two weeks. IS 2 – Assure comfortable, quiet sleeping conditions. IS 3 – Improve dissemination of information on the need for adequate hydration and nutrition. IS 4 – Conduct further study of sleep deprivation and other factors affecting fatigue of firefighters. IS 5 – Use transportation or spike camps to reduce fatigue.	1	 1 1 1 3 2
Goal 77. Crew Supervisors Division Supervisors and Incident Management Teams must get the information they need, but also be shielded from a flood of unnecessary information, and the risk of information overload. IS 1 – Be selective on what is broadcast and what is requested.	2	 2
Principle – Foster physical fitness for the job*		
Goal 78. Develop a widely accepted physical fitness test for wildland firefighters. Goal 79. Physical testing must be conducted honestly and for all. Goal 80. Minimize wildland firefighter fatalities from health or physical conditioning factors. IS 1 – Finish validation and acceptance testing of the Pack Test series or another new physical fitness test, and rigorously enforce the new test. IS 2 – Require contractors and encourage all others at Federal fires to meet the new physical fitness test. IS 3 – Educate the workforce about the new test. IS 4 – Hold testers accountable.	1 1 1	 1 2 3 1

* Reducing fatigue is a key aspect of human factors considerations, but could also be grouped under leadership issues.

GOALS AND IMPLEMENTATION STRATEGIES		PRIORITY RATING ⁷
<i>Principle – Foster unit cohesion.</i>		
<i>Goal 81. Foster better crew cohesion, especially among Type II crews.</i> IS 1 – Adapt and adopt CRM-type training and attitudes. IS 2 – Develop assessment instrument to periodically refine CRM-type training. IS 3 – Infuse CRM principles throughout training. IS 4 – Employ team building technologies when teams first meet. IS 5 – Consider use of outside vendor for CRM development and training. IS 6 – Develop work climate of trust through changes in the culture.	2	1 2 2 2 3 2
<i>Principle – Practice safety day-to-day.</i>		
<i>Goal 82. Develop a safety culture that encourages people to think in the context of safe practices, standards, and procedures.</i> IS 1 – In addition to all of the above, get firefighters and managers to raise safety consciousness in day-to-day activities.	2	2
EXTERNAL INFLUENCES		
<i>Principle –Promote prevention and fuel treatment programs.</i>		
<i>Goal 83. Educate the public on the limitations and dangers of wildland firefighting.</i>	2	
<i>Goal 84. Educate the public on the specific mitigating factors that may influence wildland fires and reduce damage from them.</i> IS 1 – Promote public education on the limitations of firefighting and practical mitigation efforts through a variety of venues. IS 2 – Broaden the efforts of the Wildland/Urban Interface Group, and link them to others. IS 3 – Use the Internet. IS 4 – Distribute catalog of public education materials.	2	2 3 3 3
<i>Goal 85. Fire budgets and their allocation need to be set with an eye toward their implication for firefighter safety.</i> IS 1 – Fund the new safety initiatives. IS 2 – Get budgeters to clarify the potential impacts of different budget levels, including the shift to do more prevention and hazard reduction. IS 3 – Inform firefighters and fire managers about the budget decision. IS 4 – Modify the Fire Management Leadership course to reflect impacts of alternative budget strategies. IS 5 – Develop an interagency fire prevention strategy as input to budget.	2	1 2 3 2 2

GOALS AND IMPLEMENTATION STRATEGIES	PRIORITY RATING ⁷	
<p><i>Goal 86. Improving forest health and removing accumulated fuels should be pursued to reduce the intensity of fires.</i></p> <p>IS 1 – Consolidate diverse strategies into a cohesive plan.</p> <p>IS 2 – Consider using multiple funding options.</p> <p>IS 3 – Amend the National Environmental Protection Act to require consideration of firefighter safety.</p>	<i>1</i>	
		2
		2
		3